Attachment 4

PARTICIPANTS & TRANSACTIONS IN

THE CRUDE OIL MARKET AT THE LEASE IN TEXAS

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PARTICIPANTS & TRANSACTIONS IN THE CRUDE OIL MARKET

AT THE LEASE IN TEXAS

A review of records maintained by the State of Texas shows the existence of a highly active, competitive market for crude oil at the lease. The data shows thousands of transactions each month involving hundreds of thousands of barrels sold each day in arm's-length transactions between parties with opposing economic interests.

This paper describes the crude oil market at the lease in Texas for a representative month - December 1995. While this is a snapshot in time, the market structure described herein is believed representative of the market structure at the lease which has existed for decades.

Dimensions Of the Crude Market In Texas

The crude oil market at the lease in Texas is very large in terms of volume as well as number of participants. Figure A is a schematic which represents this market. The market at the lease is between the producer/seller and the First Purchaser. There are currently over six thousand producers and about one hundred fifty First Purchasers in Texas. Producers, as well as the First Purchasers, are comprised of refiners and non-refiners. Most of the oil produced in the State is produced by non-refiners while, at the lease, most is purchased by refiners and/or their affiliates. In most instances, this oil is transported to and run in their refineries. Some oil, about 17%, is purchased at the lease by non-refiners and taken to a reseller market, usually remote from the lease, for subsequent resale to another reseller or to a refiner. Eventually, of course, all barrels wind up being sold to or run by a refiner.

Dimensions Of the Crude Market At the Lease

An excellent source of data on lease transactions is maintained by the State of Texas Comptroller's Office and is known alternatively as the "First Purchaser Database" or the "10-132 Database". This database provides a record of transactions between the producers and First Purchasers by month and is maintained to assure that the Severance and Regulatory Tax is paid on all oil produced and removed from the lease. The records in the database are used to compare what the producers report with what the First Purchasers report. Data extracted from December 1995, a randomly selected month, is discussed herein.

This data was inserted into a database to sort arm's-length and potentially non arm's-length transactions. Of course, refiners and their affiliates are the predominate buyers at the lease. First, transactions between the producing and refining or trading affiliates of the same company were classified as non-arm's-length. In addition, however, for the purpose of this analysis, several additional and very conservative assumptions were made as follows: 1) sales between any refiner/producer and any other refiner/First Purchaser were classified as non- arm's-length transactions; and, 2) the three large trucker resellers, i.e., Koch, Texaco Trading and Transportation, Inc. and Scurlock Permian, while performing mainly in a reseller function were also classified as refiners insofar as they were affiliates of refiners. Thus, for example, Scurlock Permian purchases from all producers affiliated with refiners were excluded even though these transactions are clearly arm's-length. Ashland/Scurlock is not a producer and in December 1995, Ashland (Scurlock's parent) sold no barrels at the lease to Scurlock.

FIGURE A

SCHEMATIC SHOWING CRUDE OIL MARKETS

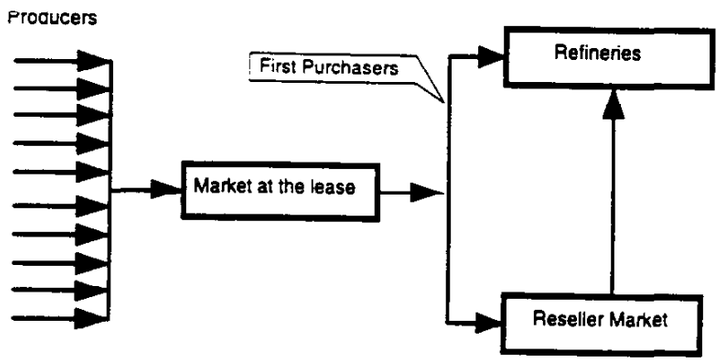
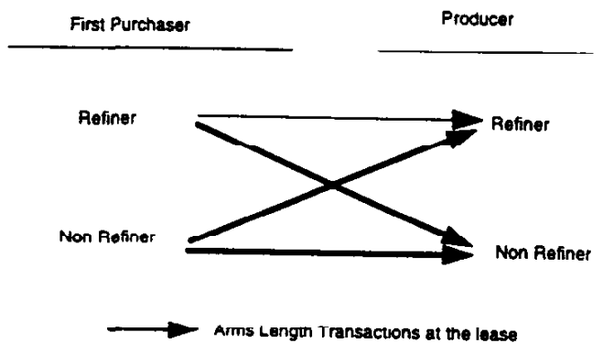


FIGURE B

MARKET PARTICIPANTS AT THE LEASE



Only the remainder of the transactions were considered to be arm's-length for purposes of this paper, i.e., sales by purely independent producers as well as sales by refiner/producers to purely independent traders.

The first step in analyzing this First Purchaser database was to classify each First Purchaser and each producer as a refiner or a non-refiner. The producer classification is displayed in Table 1. Thirty-three refiner/producers were identified. The other producers, over 6,200, were classified as non-refiners.

The First Purchaser classification is presented in Table 2. As can be seen from the Table, one hundred fifty active First Purchasers were identified in December 1995. Each such purchaser was classified as either:

R	=	Refiner (or an affiliate of a refiner)
NR	=	Non-Refiner
NRPP	=	Non-Refiner purchaser buying own or an affiliate's oil

Once this was done, it was possible to partition the Form 10-132 line item entries relating to the December 1995 crude oil market between refiners and non-refiners and calculate: a) the fraction of the total volume produced which was sold in arm's-length transactions as defined above; and, b) the number of line item entries involved in each set or grouping of the above sales.

The line item entries must be defined in the context of the Controller's First Purchaser Report. Form 10-132 requests all barrels sold in a month (not number of separate sales transactions) between a producer and a First Purchaser in a county. Thus, if a producer sold the oil from three leases to a particular First Purchaser in a particular county, there would be only one line item entered on the form displaying total barrels in that county, the average price, which party is assuming the tax liability, etc. Thus, the word line item, as used in this context, stands for the set of transactions between a producer and a buyer in a single county in a single month.

In December 1995, there were a total of 12,227 line item entries for all counties in the State of Texas. According to the Railroad Commission, in January 1996, there were 60,615 active leases in Texas. Thus on the average, each of these line items represented 60,615/12,226 = 4.96 leases and presumably separate commercial transactions for each of these leases.

TABLE 1
LIST OF REFINER/PRODUCERS DECEMBER 1995

#	PRODUCER	TYPE(1)	MB/D
1	AMOCO PRODUCTION CO.	R	128.27
2	TEXACO E&P INC	R	80.71
3	EXXON CORP.	R	79.39
4	CHEVRON USA	R	65.55
5	SHELL WESTERN E&P	R	51.47
6	MARATHON OIL CO.	R	43.62
7	MOBIL PRODUCING TX & NM	R	38.35
8	ATLANTIC RICHFIELD COMPANY	R	38.29
9	AMERADA HESS	R	31.93
10	CONOCO INC	R	29.53
11	UNION OIL CO OF CALIFORNIA	R	29.23
12	HUNT OIL CO	R	28.17
13	PENNZIOL E AND P	R	19.75
14	PHILLIPS PETROLEUM CO	R	19.47
15	FINA OIL AND CHEMICAL CO	R	9.90
16	SHELL LAND AND ENERGY	R	8.69
17	MVP PRODUCTION	R	6.55
18	COASTAL OIL AND GAS	R	2.45
19	VASTAR	R	2.41
20	MURPHY E&P COMPANY	R	1.70
21	SHELL FRONTIER O & G	R	1.65
22	HOWELL PETE	R	0.37
23	PLACID OIL	R	0.36
24	HOLLYPETE	R	0.27
25	PETRO_HUNT CORP	R	0.07
26	PETROSOURCE	R	0.02
27	SINCLAIR EXP CO	R	0.02
28	COASTAL STATES TRADING	R	0.01
29	PRIDE EXP	R	0.01
30	SCURLOCK PERMIAN CORP.	R	0.01
31	HESS PROD	R	0.01
32	HUNT PETE CORP	R	0.01
33	SUN COMPANY INC (R&M)	R	0.01
			718.42

TABLE 2
LIST OF FIRST PURCHASERS DECEMBER 1995

#	FIRST PURCHASER	CLASS(1)	MB/D	% OF TOTAL
1	AMOCO PRODUCTION CO.	R	142.96	9.6
2	TEXACO TRADING & TRANSPORTATION INC.	R	109.73	7.4
3	SCURLOCK PERMIAN CORP.	R	108.88	7.3
4	PHILLIPS	R	101.42	6.8
5	MOBIL OIL CORP.	R	97.57	6.6
6	EXXON CORP.	R	96.07	6.5
7	KOCH INDUSTRIES	R	72.29	4.9
8	SHELL OIL COMPANY	R	53.82	3.6
9	MARATHON OIL CO.	R	51.75	3.5
10	EOTT OPERATING LP	NR	50.42	3.4
11	BASIS PETROLEUM	R	48.32	3.3
12	CHEVRON USA	R	48.02	3.2
13	FINA OIL AND CHEMICAL CO	R	47.73	3.2
14	CONOCO INC	R	40.61	2.7
15	SUN COMPANY INC (R&M)	R	38.07	2.6
16	CITGO PETROLEUM	R	30.93	2.1
17	UNION PACIFIC FUELS	NRPP	29.08	2.0
18	ATLANTIC RICHFIELD COMPANY	R	26.36	1.8
19	ORYX CRUDE T&T	NRPP	24.21	1.6
20	PRIDE COMPANIES	R	21.43	1.4
21	UNION OIL CO OF CALIFORNIA	R	17.99	1.2
22	LANTERN PETROLEUM CORP.	NR	17.17	1.2
23	PENNZOIL GAS MARKETING COMPANY	R	16.88	1.1
24	GULFMARK ENERGY INC.	NR	14.82	1.0
25	AMERADA HESS	R	13.49	0.9
26	BURLINGTON RESOURCES TRADING INC.	NRPP	9.71	0.7
27	PLAINS MKT & TRANS.	NR	9.68	0.7
28	SANTA FE ENERGY RESOURCES	NRPP	9.61	0.6
29	MESA PIPELINE CO.	NR	9.41	0.6
30	TOTAL PETROLEUM	R	7.81	0.5
31	WICKFORD ENERGY	NR	7.79	0.5
32	COASTAL STATES TRADING	R	6.79	0.5
33	NORTH RIDGE ENERGY MKT.	NR	6.48	0.4
34	HOWELL CRUDE OIL CO.	R	6.44	0.4
35	MURPHY OIL	R	5.96	0.4
36	BHT MARKETING	NR	5.72	0.4
37	ADA CRUDE OIL COMPANY	NR	5.48	0.4
38	TEXON	NR	5.47	0.4
39	NAVAJO CRUDE OIL MARKT CO	R	4.50	0.3
40	EAST TEX CRUDE OIL	NR	4.37	0.3
41	VASTAR	R	3.99	0.3
42	HIGHLAND ENERGY CO.	NR	3.42	0.2
43	DORADO OIL COMPANY	NRPP	3.34	0.2
44	GEER TANK TRUCKS	NR	3.25	0.2
45	MEREDITH MKT. CO.	NR	3.20	0.2
46	BIG TEX CRUDE OIL CO.	NR	3.20	0.2
47	DIAMOND SHAMROCK	R	3.17	0.2
48	NORCO CRUDE GATHERING	NR	2.32	0.2
49	FALCO S&P	NR	2.05	0.1
50	GREAT WESTERN MKT INC.	NRPP	2.03	0.1
51	LEXAS OIL	NR	1.74	0.1

TABLE 2
LIST OF FIRST PURCHASERS DECEMBER 1995

#	FIRST PURCHASER	CLASS(1)	MB/D	% OF TOTAL
52	MURPHY E&P COMPANY	R	1.67	0.1
53	OASIS PARTNERS LTD.	NR	1.67	0.1
54	VISION RESOURCES	NR	1.38	0.1
55	ATLAS PROCESSING COMPANY	R	1.27	0.1
56	NAVAJO REFINING CO	R	1.07	0.1
57	W.T. WAGGONER ESTATE	NRPP	1.05	0.1
58	MAYNARD OIL	NRPP	1.02	0.1
59	PETROSOURCE	R	0.98	0.1
60	SUPERIOR CRUDE GATHERING	NR	0.93	0.1
61	PANENERGY	NR	0.92	0.1
62	THE MORE GROUP	NR	0.88	0.1
63	VINTAGE MARKETING	NRPP	0.80	0.1
64	L&L INC.	NR	0.77	0.1
65	US FUELS INC.	NR	0.76	0.1
66	KGF SALES CO.	NR	0.72	0.0
67	LA GLORIA	R	0.71	0.0
68	NATIONAL COOPERATIVE REFINERY ASSOC	R	0.68	0.0
69	PLACID REFINING CO.	R	0.62	0.0
70	QUANTUM TRADING CO.	NR	0.60	0.0
71	US TRADING & TRANSPORTATION	NR	0.50	0.0
72	SENEX PL CO.	NR	0.49	0.0
73	LION OIL	R	0.49	0.0
74	BRIGHT & BIVINS PETROLEUM	NR	0.48	0.0
75	BRYAN WOOBINE GATHERING	NR	0.47	0.0
76	IPM CORP.	NR	0.42	0.0
77	JENEX OPERATING CO.	NRPP	0.41	0.0
78	CENTRAL CRUDE INC.	NR	0.41	0.0
79	STRATUM GROUP	NR	0.41	0.0
80	STATEWIDE CRUDE INC.	NRPP	0.40	0.0
81	OASIS OIL CORP.	NR	0.39	0.0
82	NGC OIL TRADING	NR	0.37	0.0
83	GATHERING & ENERGY MKT CO.	NR	0.35	0.0
84	TORCH ENERGY	NRPP	0.33	0.0
85	MOBIL PRODUCING TX & NM	R	0.26	0.0
86	E&A OIL CO.	NR	0.25	0.0
87	ALLIED CRUDE PURCHASING	NR	0.24	0.0
88	JN PETROLEUM MKT.	NRPP	0.24	0.0
89	INDEPENDENT ENERGY	NR	0.23	0.0
90	C&C OPERATING INC.	NRPP	0.20	0.0
91	JOHN L. COX	NRPP	0.18	0.0
92	ENPRO	NR	0.18	0.0
93	TEXAS OIL & GATHERING	NR	0.18	0.0
94	SHELL WESTERN E&P	R	0.18	0.0
95	TEXPATA PL CO.	NR	0.16	0.0
96	MIDLAND CRUDE OIL PURCHASING CORP.	NRPP	0.15	0.0
97	R&K COMPANY	NRPP	0.15	0.0
98	DEVON MARKETING CORP.	NR	0.15	0.0
99	AMERICAN TRANSPORTATION & MKT	NR	0.14	0.0
100	MITCHELL GAS SERVICES INC	NRPP	0.14	0.0
101	HUNT REFINING CO	R	0.13	0.0
102	TEXACO E&P INC	R	0.13	0.0

TABLE 2
LIST OF FIRST PURCHASERS DECEMBER 1995

#	FIRST PURCHASER	CLASS(1)	MB/D	% OF TOTAL
103	VULCAN ENERGY GROUP	NR	0.13	0.0
104	AGE REFINING INC	R	0.12	0.0
105	BLANK	NR	0.11	0.0
106	DAVID THALMANN VACUUM SERVICE	NR	0.09	0.0
107	CENTRAL CRUDE CORP.	NR	0.09	0.0
108	CHAMPION TRANSPORT INC.	NR	0.08	0.0
109	BERRY PETROLEUM	NR	0.08	0.0
110	CALUMET LUBRICANTS CO	R	0.07	0.0
111	BLACK GOLD TRADING CO.	NRPP	0.07	0.0
112	LITTLE INCH PL COMPANY	NR	0.06	0.0
113	WILLIAMS ENERGY	NR	0.06	0.0
114	CONTINENTAL ORZARK	NRPP	0.06	0.0
115	MARTIN GAS SALES	NR	0.05	0.0
116	SO TEXAS GATHERING CO.	NRPP	0.04	0.0
117	CARDINAL PIPELINE CORP.	NR	0.04	0.0
118	ANDREWS OIL BUYERS INC	NR	0.04	0.0
119	DOT OIL CORP.	NRPP	0.04	0.0
120	BARGAS	NRPP	0.03	0.0
121	LASAR GATHERING CORP.	NR	0.03	0.0
122	COAST ENERGY GROUP	NR	0.03	0.0
123	ENRON	NR	0.03	0.0
124	BLS RESOURCES	NRPP	0.02	0.0
125	ADAIR TRANSPORT	NRPP	0.02	0.0
126	LEBUS OIL FIELD SERVICE	NRPP	0.02	0.0
127	QUITMAN CONSTRUCTION CO.	NRPP	0.02	0.0
128	WILLIAMS SYSTEMS OIL FIELD DISPOSAL	NRPP	0.02	0.0
129	GIBTOWN	NR	0.02	0.0
130	LANGHAM PETROLEUM EXP. CO.	NRPP	0.02	0.0
131	MIDWESTERN RECLAMATION	NRPP	0.01	0.0
132	WARFIELD PROPERTIES	NR	0.01	0.0
133	T S T PARAFFIN SERV. CO	NRPP	0.01	0.0
134	INTERSTATE PETE CORP.	NR	0.01	0.0
135	PANTHER & BRYANT SALT WATER	NRPP	0.01	0.0
136	FOXX TRANSPORTS	NR	0.01	0.0
137	CORNELIAN RECLAIMING	NRPP	0.01	0.0
138	WOODLAWN PIPELINE	NR	0.01	0.0
139	HYDROCARBON PROCESSING PARTNERS	NR	0.01	0.0
140	ANDRUS PIPELINE	NRPP	0.01	0.0
141	ROAD OIL SALES	NR	0.01	0.0
142	BRYANT SALT WATER DISPOSAL	NRPP	0.01	0.0
143	FORMOSA HYDROCARBONS	NR	0.00	0.0
144	LENNON OIL	NRPP	0.00	0.0
145	OILCO ENERGH CO	NR	0.00	0.0
146	RICE ENGINEERING	NRPP	0.00	0.0
147	AMIGO DIVERSIFIED SERVICES	NRPP	0.00	0.0
148	JACK FROST PURCHASING	NR	0.00	0.0
149	SINK-HOLE INC.	NRPP	0.00	0.0
150	UMC PETROLEUM CORP.	NR	0.00	0.0
			1,486.29	100.0

Table 3 displays the pertinent volume and transaction figures for each of the two sets of market participants, i.e., refiners and non-refiners.

Table 3
PARTITION OF VOLUMES & LINE ITEM ENTRIES
December 1995

	Volume, MB/D		No. Of Line Items	
	Producers	First Purchasers	Producers	First Purchasers
Refiners	718	1,231	957	8,913
Non Refiners	767	254	11,270	3,314
Total	1,486	1,486	12,227	12,227

Non-refiners produced 767 MB/D equivalent to 52% of the total volume while refiners purchased 1,230 MB/D at the lease or 83% of the total. The number of line items during this month, while believed to be typical, was huge at 12,227. In addition, on the average, each of these "summary" line items represents about five leases or separate commercial transactions between the producer and the First Purchaser. The non-refiners or independent producers had 11,270 line item entries during the month, equivalent to 92% of the transactions and 52% of the volume.

Table 4 shows the number of line item entries involving arm's-length transactions based on the conservative assumptions described above. It shows that of the 12,227 line item entries for the State of Texas (all counties) in December 1995, 11,236 entries involved one or more arm's-length transactions using these conservative assumptions.

Table 4
ARM's- LENGTH LINE ITEM ENTRIES
December 1995

Producer to First Purchaser	Volume MB/D	Volume %	Line Items Number	Line Items %
Refiners to non-refiners	21	1.4	90	0.7
Non-refiners to refiners	534	35.9	8,046	65.8
Non-refiners to non-refiners(1)	171	11.5	3,100	25.4
Total, Arm's-Length	726	48.8	11,236	91.9
Total, All Line Items	1,486	100.0	12,227	100.0

(1) These figures do not include non-refiner/purchasers of an affiliate's oil. For example, it does not include Union Pacific Fuels purchases of their parent's production. See Table 5 for a list of these excluded line items.

TABLE 5

NON REFINER PURCHASES OF OWN/AFFILIATE PRODUCTION
DECEMBER 1995

#	FIRST PURCHASER	CLASS	MB/D	% of STATE
1	UNION PACIFIC FUELS	NRPP	28.79	1.9
2	ORYX CRUDE T&T	NRPP	19.06	1.3
3	SANTA FE ENERGY RESOURCES	NRPP	9.61	0.6
4	MAYNARD OIL	NRPP	1.02	0.1
5	VINTAGE MARKETING	NRPP	0.80	0.1
6	GREAT WESTERN MKT INC.	NRPP	0.46	0.03
7	JENEX OPERATING CO.	NRPP	0.41	0.03
8	TORCH ENERGY	NRPP	0.33	0.02
9	JN PETROLEUM MKT.	NRPP	0.21	0.01
10	C&C OPERATING INC.	NRPP	0.20	0.01
11	W.T. WAGGONER ESTATE	NRPP	0.19	0.01
12	JOHN L. COX	NRPP	0.18	0.01
13	MIDLAND CRUDE OIL PURCHASING CORP.	NRPP	0.15	0.01
14	R&K COMPANY	NRPP	0.15	0.01
15	MITCHELL GAS SERVICES INC.	NRPP	0.14	0.01
16	CONTINENTAL ORZARK	NRPP	0.06	0.004
17	BURLINGTON RESOURCES TRADING INC.	NRPP	0.05	0.003
18	DORADO OIL COMPANY	NRPP	0.05	0.003
19	SO TEXAS GATHERING CO.	NRPP	0.04	0.003
20	DOT OIL CORP.	NRPP	0.04	0.002
21	BARGAS	NRPP	0.03	0.002
22	BLS RESOURCES	NRPP	0.02	0.002
23	ADAIR TRANSPORT	NRPP	0.02	0.001
24	LEBUS OIL FIELD SERVICE	NRPP	0.02	0.001
25	QUITMAN CONSTRUCTION CO.	NRPP	0.02	0.001
26	WILLIAMS SYSTEMS OIL FIELD DISPOSAL	NRPP	0.02	0.001
27	LANGHAM PETROLEUM EXP. CO.	NRPP	0.02	0.001
28	MIDWESTERN RECLAMATION	NRPP	0.01	0.001
29	T S T PARAFFIN SERV. CO	NRPP	0.01	0.001
30	STATEWIDE CRUDE INC.	NRPP	0.01	0.001
31	PANTHER & BRYANT SALT WATER	NRPP	0.01	0.001
32	CORNELIAN RECLAIMING	NRPP	0.01	0.001
33	BLACK GOLD TRADING CO.	NRPP	0.01	0.000
34	ANDRUS PIPELINE	NRPP	0.01	0.000
35	BRYANT SALT WATER DISPOSAL	NRPP	0.01	0.000
36	LENNON OIL	NRPP	0.005	0.000
37	RICE ENGINEERING	NRPP	0.004	0.000
38	AMIGO DIVERSIFIED SERVICES	NRPP	0.003	0.000
39	SINK-HOLE INC.	NRPP	0.001	0.000
			62.18	4.2

Top Twenty First Purchasers In Texas

An alternative way to look at the make up of the Texas crude oil market at the lease is to examine the purchases of the larger First Purchasers.

In this case, the top twenty First Purchasers were selected. Their identity is shown across the bottom of Figure C. These twenty purchased 1,240 MB/D or 85.0% of the state total in December 1995. The purchasers range in size from No. 1, Amoco Production Company at 143.0 MB/D, to No. 20, Pride Companies at 21.4 MB/D. Their collective purchases have been classified into three categories as shown in Table 6.

Table 6
PARTITION OF TOP TWENTY FIRST PURCHASERS PURCHASES
December 1995

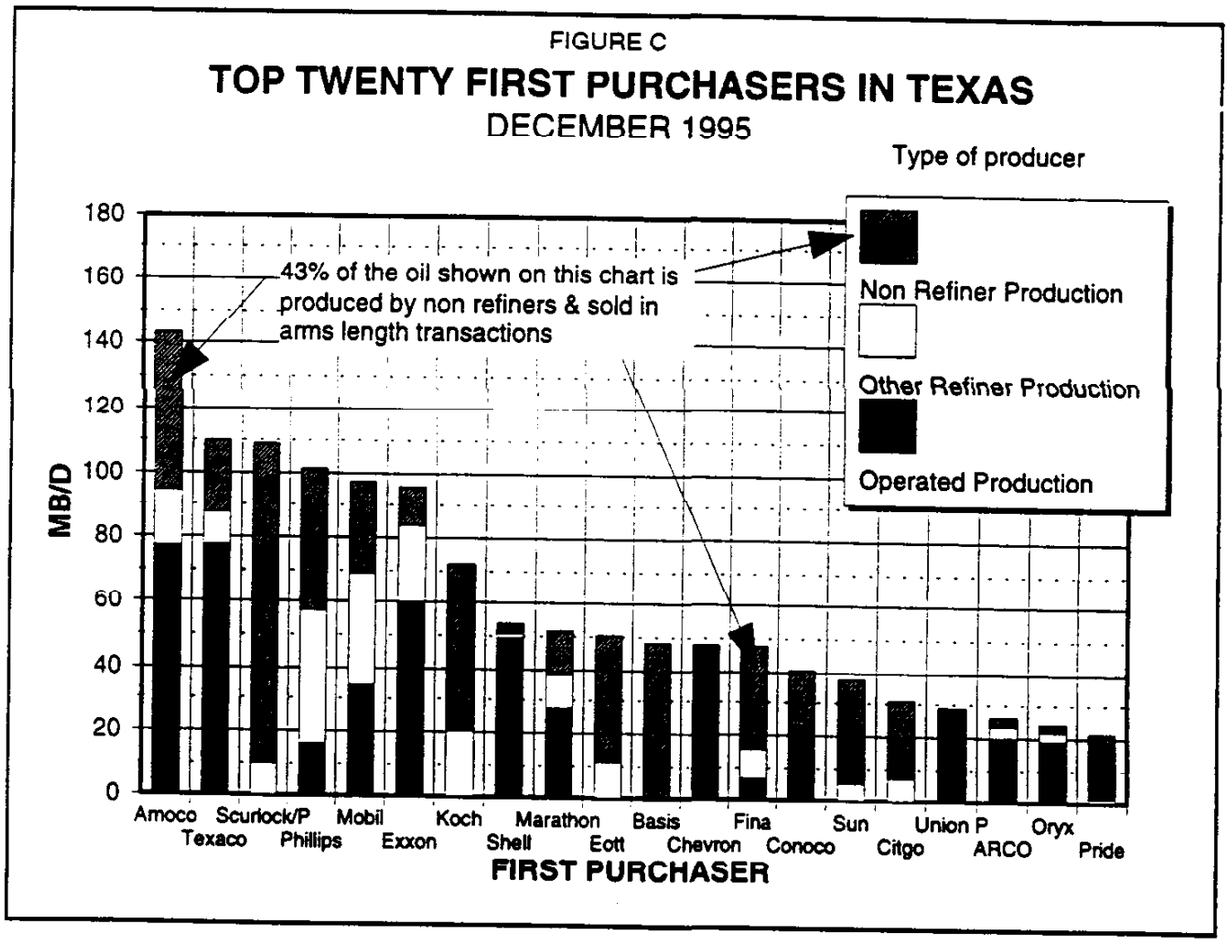
Class	MB/D	%
Operated & Affiliated Production	489.1	39.4
Other Refiner Production	211.9	17.1
Non-Refiner Production	538.7	43.5
	1,239.7	100.0

As can be noted from Figure C, these Twenty Purchasers were mainly comprised of refiners and the large truckers/resellers. Their purchases from non-refiners can also be used as an indication of the extent (43.5%) of transactions in the state between parties with opposing economic interests.

FIGURE C

TOP TWENTY FIRST PURCHASERS IN TEXAS

DECEMBER 1995



Observations

- Of the 6,214 producers in the State during 1995, only thirty-three are refiners or affiliates of refiners. Refiners and their affiliates accounted for slightly less than one-half of the oil produced in Texas during December 1995. There are over six-thousand producers which must either sell their oil at the lease (most do) or retain ownership and move their oil to a downstream market.

- In December 1995, there were one hundred fifty active First Purchasers at the lease. Of this total, forty-one were refiners and/or affiliates while the remainder were comprised of:

  - reseller/truckers, e.g., Lantern Petroleum
  - trading companies, e.g., Northridge Energy
    producing companies, e.g., Santa Fe Energy Resources

- Refiners and their affiliates bought at the lease 1,231 MB/D or 83% of the total oil purchased in the State. About 57% of this oil represented their own (collective) production, but the remaining 43% came from non-refiners. This amounted to 534 MB/D and over eight-thousand line items. Since each of these line items may represent multiple lease transactions, this represents a huge amount of clearly arm's-length commercial dealings spread throughout the state.

- Buying crude at the lease is not limited to refiners. For example, in December 1995 there were one hundred nine non-refiner First Purchasers who purchased 254 MB/D at the lease.

- There is a small amount of refiner production, 21 MB/D spread over ninety line items, being purchased by non-refiners.

- Of the 6,000 non-refiner producers in the state, only 39 elected to retain their own oil for resale in downstream markets. Only 3 or the 39 are of any size as shown in Table 5. The 62.2 MB/D figure is equivalent to only 4.2% of the State's total for the month.

Conclusions

- Adding the arm's-length transactions together indicates that about one-half (actually 49%) of the crude oil market at the lease is between companies in which at least one of the parties is not affiliated with any refiner. This market is quite large in absolute terms, i.e., 726 MB/D and involves over 11, 000 line item entries in the First Purchaser database maintained by the State of Texas for a typical month.

- Analysis of the activity of the Top Twenty First Purchasers in December 1995 reinforces the conclusion that about one-half of the oil in Texas is sold at the lease in transactions in which at least one of the parties is not affiliated with any refiner.

- The data clearly show a viable market at the lease where there are thousands of examples of arm's-length lease transactions throughout the State which could serve as realistic indicators of market value at the lease.

Attachment 5

FIFTH JUDICIAL DISTRICT COURT
COUNTY OF CHAVES
STATE OF NEW MEXICO
Case Number CV-95-322

CARL ENGWALL, as Co-Trustee of the Carl and Ruth Engwall Living Trust et al.,

Plaintiffs,

vs.

AMERADA HESS CORPORATION, et al.,

Defendants.

TRANSCRIPT OF PROCEEDINGS

Volume 1

On the 13th day of January, 1997, at 9:20 AM, this matter came on for hearing before the HONORABLE ALVIN F. JONES, Judge of the Fifth Judicial District, State of New Mexico, Division II, in Roswell, New Mexico.

J. BENJAMIN JOHNSON, JR.

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. EAVES:

Q. Mr. Johnson, would you state your full name?

A. Joseph Benjamin Johnson, Jr.

Q. By whom are you employed, sir?

A. Summit Resource Management, Inc.

Q. Can you tell the Court what the business of Summit Resource Management, Inc., is?

A. Summit is a crude oil marketing and consulting firm. We market crude oil for independent producers, royalty owners, and consult regarding crude oil marketing issues.

Q. Would you briefly --

MR. EAVES: Your Honor, we are going to be talking about matters that appear in plaintiffs' Exhibit 193. We have placed for Your Honor copies of the exhibits.

Would you like for me to have one of my people turn it to 193?

THE COURT: No. I will find it.

MR. EAVES: Volume 5, I am told, Your Honor.

actual proceeds, if that is available. If not, you'd move to a comparable-type -- comparable comparison. Then the last would be a net-back-type calculation.

Q. The net-back method -- was the Piney Woods case a class action?

A. Yes, I believe it was.

Q. The net-back method that is endorsed in the Piney Woods opinions, there was more than one, is that the same net-back method that Mr. Hensley was talking about yesterday?

A. Well, I am not sure what net-back method Mr. Hensley was referring to yesterday.

Q. I am not either, so that is an unfair question. You also mentioned a method that you recommended to the Minerals Management Service as another alternative. Can you tell me what that method is?

A. The method suggested or recommended to the Minerals Management Service begins with an evaluation of what was actually received for the oil. If we have records by the oil companies that show what they actually got for it, if they really sold the oil outright in an arm's-length final sale with no other consideration, then that was -- that would be a value that would be used.

If they entered into a buy-sell transaction where oil, as I have shown this morning where oil was exchanged for oil at another location, then we can ascertain from that simple calculation what real value was provided at the lease under that buy-sell transaction, so those are actuals. If we didn't have any of those actual transactions, in other words, if, in fact, the oil company took the oil in their own pipelines, took it to their own refinery, and it never entered the marketplace at any point, then we can use a comparable analysis to look at other nearby locations whereby we look at the buy-sell transactions that were employed by the defendants or by other companies of similar sophistication.

Then the final method is, if there are none of those, if there are no buy-sell transactions available, then the last would be a methodology, a net-back type methodology to be administered by the Minerals Management Service.

Q. Are you generally aware of the Common Purchaser Statute in New Mexico?

A. Yes.

Q. Would the Common Purchaser Statute provide any methodology that might be useful as a possible method of accomplishing a damage calculation if this

Attachment 6

FIFTH JUDICIAL DISTRICT COURT
COUNTY OF CHAVES
STATE OF NEW MEXICO
Case Number CV-95-322

CARL ENGWALL, as Co-Trustee of the Carl and Ruth Engwall Living Trust et al.,

Plaintiffs,

vs.

AMERADA HESS CORPORATION, et al.,

Defendants.

TRANSCRIPT OF PROCEEDINGS

Volume 5

On the 17th day of January, 1997, at 8:30 AM, this matter came on for hearing before the HONORABLE ALVIN F. JONES, Judge of the Fifth Judicial District, State of New Mexico, Division II, in Roswell, New Mexico.

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THE COURT: I prefer to deal it when we get to it.

MR. EAVES: Thank you.

MR. ZOTT: In that regard, the plaintiffs did file a motion, and we worked last night to file a response. I know you have plenty to read, and you don't need to read anything else, but I would like to at least tender it and make it part of the record. This is our response to the written motion. I can hand it up now or wait and do it later.

THE COURT: Have you submitted it to the clerk?

MR. ZOTT: No. We are going to file it as soon as we hand it up here.

THE COURT: I left the copy that I was thoughtfully provided by Mr. Eaves in my office.

MR. EAVES: I have got another one, Your Honor.

THE COURT: Oh, thanks.

MR. EAVES: I detect that was less than sincere, Your Honor.

MR. ZOTT: Should we proceed with the examination?

THE COURT: Please.

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JOSEPH P. KALT

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. ZOTT:

Q. Can you please state your name and spell your last name.

A. Joseph P. Kalt, K-A-L-T.

Q. Where are you employed?

A. I am employed at Harvard University, Kennedy School of Government, and at the Economics Resource Group.

Q. Can you tell the Court what the Economic Resource Group is?

A. Economic Resource Group is a consulting firm made up, in terms of its principals, of Ph.D. economists specializing in the economics of competition, antitrust, regulation, with particular emphasis in the energy industry.

Q. Can you please describe your educational background for the Court?

A. Yes. After growing up and graduating from high school in Tucson, I went on to Stanford University where I got my bachelor's degree in economics, and then following that, went on and got my

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master's and doctorate degrees in economics at the University of California at Los Angeles.

Q. You mentioned you are a –

MR. EAVES: Your Honor, if it will save time, we know he is a good economist, so I don't –

THE COURT: Do you want to present –

MR. ZOTT: We will be brief, Your Honor.

THE COURT: That is fine.

Q. (BY MR. ZOTT) You mentioned you were a professor at Harvard.

A. Yes.

Q. Can you tell the Court – briefly describe your career as a professor at Harvard.

A. Sure. After leaving UCLA, I joined Harvard University in the Department of Economics as a nontenured faculty member, assistant and associate professor. In 1986, I took tenure at the John F. Kennedy School of Government, which is Harvard's professional school in public policy and management, and have served as full professor at the Kennedy School since 1986.

Q. Have you held any administrative positions at Harvard?

A. Yes. At the Kennedy School, I have been the academic dean for research, chairman of degree

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programs, chairman of the Ph.D. program, and I am currently the chair of the economics and methods program at the school.

Q. Have you specialized at all while you have been a professor at Harvard?

A. Yes. I have specialized throughout my career. I am what is known in economics jargon as an industry organization economist studying issues of competition, antitrust, regulation, in my case, with particular emphasis on natural resource industries and other regulated industries in particular, the oil and gas industry.

Q. How about your teaching responsibilities at Harvard, can you briefly describe those?

A. Sure. When I was in the Harvard Economics Department up until 1986, I had primary responsibility for teaching the graduate and undergraduate courses in antitrust and regulation along with basic microeconomics. At the Kennedy School, I have had responsibility of teaching, again at the graduate level here at the Kennedy School, antitrust and regulation, energy – environment energy and natural resource courses, as well as various courses in basic microeconomics and economic theory.

Q. Did those energy courses also include the

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function in the industry. It's a significant source of capital to the production level of the industry. It's also a mechanism by which producers – producers and refiners that are vertically integrated match production to refinery needs, and we see it throughout industry in the United States and elsewhere.

Vertical integration is quite common, and the fact that people use their own crude oil should be expected.

Q. Finally, what I'd like to do now is turn to where we, I guess, began today. We're a little out of order given the transactional database issues, and maybe I'll let you handle these instead of me.

I think where we were is we were on opinion number two. We've already talked about your first conclusion with respect to the proper method of valuing crude oil at the lease uses arm's-length comparable transactions at the lease.

Then I think you referred to having a hypothesis that comparable transactions at the lease demonstrate the influence of highly localized supply and demand factors.

Can you tell the Court the nature of that conclusion, and then we can move into the supporting foundation for it?

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A. Yes. Your Honor, as I indicated, I began with a hypothesis that it was possible that supply and demand factors varied from lease-to-lease and from transaction-to-transaction; and that, given the economics of supply and demand, with those factors varying, then it was then possible that those supply and demand factors would be reflected as a range, rather than a common price, for all arm's-length comparable transactions at the lease.

Plaintiffs' experts' proposed valuation methods cannot avoid highly localized inquiry, and what this second bullet on Tab 1-1 goes into, if you look at the data on actual arm's-length comparable transactions, you do indeed find that those transactions at the lease demonstrate the influence of highly localized supply and demand factors, and in a quite substantial way – that is, in magnitudes that matter.

THE COURT: We're going to take about ten minutes at this time.

MR. ZOTT: Thank you, Your Honor.

(Recess held.)

THE COURT: Be seated.

MR. ZOTT: Proceed?

THE COURT: Please.

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MR. ZOTT: Thank you, Your Honor.

Q. (BY MR. ZOTT) Professor Kalt, I think we were talking about your second conclusion in testing your hypothesis with respect to your arm's-length comparable transaction database –

A. Yes.

Q. – that you developed.

A. Yes.

Q. We're now on Tab 2-5, Your Honor.

What do arm's-length transactions in the field reveal? Let me start with that question.

A. Well, I've tried to set forth, in Tab 2-5, three findings that can be drawn from looking at arm's-length transactions in the field.

First, when you look at how the market speaks at the field level, market valuation in actual transactions varies significantly with supply and demand factors specific to particular leases, crude oils, and transactions.

That's the point I've made, that there is substantial variation in where the market is setting prices.

Secondly, if you wanted to understand why a particular transaction at a particular locale had the market value it did, you have to have information to

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understand it and would need to know what factors were going into that transaction: and that is, as I say, whether or not a specific transaction reflects market value at the lease can only be determined by examining the attributes of that transaction.

And then, thirdly, I find that market valuation in actual transactions typically spans the range of posted prices; and, in general, we find that the lower posters have prices which are in the range of the actual market transactions going on – going on at the lease.

Q. These are the outright – I think I've been amplified – these are the outright arm's-length transactions that are in your database?

A. Yes. Each of these conclusions will be founded – not entirely, but to a very large extent – on the result of looking at the transactions database.

Q. Why don't we turn to your first conclusion, that market valuation varies significantly with supply and demand factors specific to particular leases, et cetera.

I take it we're now on Tab 2-6?

A. Yes.

THE COURT: I have a question. In your

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Royalties type of property or a Penroc property.
Q. Okay. Let's turn to Tab 3-2 and start with your first subcategory, and that is the inability of the plaintiffs' valuation methods to capture field-level supply and demand factors.
A. Sure. In addition to what I just said, Your Honor, what I've done on Tab 3-2 is take the plaintiffs' screening methodology and apply it to the data for Vacuum.
This screening methodology begins with a P plus trade center price at Cushing, and then –
Q. Whose screening methodology is this?
A. This is applied by – I've used all the data from Mr. Johnson's reports.
Q. Okay.
A. And it's basically P plus, minus the transaction adjustment, which I believe is 55 cents in the screening methodology.
I've used this to show – then I've graphed on the graph the results of the screening methodology as the zero line and shown the deviations in Vacuum and the actual level of prices as the individual dots on the graph.
Q. Okay.
A. Okay.

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Q. So the zero line would be the net-back value under this screening study that Mr. Johnson performed?
A. That's correct.
Q. Okay. And then the dots are the same basic dots we saw before?
A. But now adjusted to be different from the screening methodology.
Q. What does this tell you?
A. As you can see in this methodology, this kind of methodology, which is akin, for example, to what I understand would be applied to internal transfers, it just doesn't pick up the variation in the field-level value.
Also, really going to some extent to my second conclusion about the wrong level of commerce, you tend to produce a line which is higher – but not always - which is higher than the general preponderance of the actual transactions occurring here; and for the reasons that I've argued before with respect to the marketing value added by the – that's seen in the behavior of the unintegrated marketers. I think the reason this line is turning out higher than the preponderance of the dots – that is, the preponderance of where the market speaks – is because it has not accurately netted out the marketing value

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added under the net-back methodology that their screening method applies.
Q. This is the dot that you're talking about?
A. Yes.
Q. Now, I would predict that Mr. Johnson would say, "Well, wait a minute now, even you admit, Professor, that I can adjust for gravity and I can adjust for sulfur and I can adjust for timing, and you're just using my screening number, but I can make a lot more adjustments and make it a lot more accurate."
Would that solve the problem?
A. No. As we saw in the Tab 2-10, there remains, at least in Vacuum, roughly 40 cents to a dollar variation in the value of crude oil as revealed by outright arm's-length comparable transactions reflective of the particular supply and demand valuation of that properties and that transactions attributes, and this kind of methodology would not pick up that variation.
I think it would lead to the same kinds of issues that you and I talked about a minute ago, some parties may have Beverly Hills, even after that method, and other parties may not.
Q. Now, to give it some context, that 40 cents

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to a dollar, in the context of this dispute between the parties, is that a significant number?
A. Well, yes, it is.
Q. We're skipping ahead, right?
A. Yes, you are.
Q. Let me skip ahead and then we'll come back. Why don't we –
A. Just –
Q. Why don't you give me generally –
A. If you look at the screening methodologies, Your Honor, they tend to produce – in legal terms, I think it was the damages – the underpayment number on the order of a dollar to two dollars a barrel, and you're seeing variation here of – some of the screenings produced like 75 cents a barrel, and even after adjusting for sulfur, gravity and timing, we still see 40 cents to a dollar variation reflective of, if you will, the not marketwide effects, like gravity and sulfur, but the highly specific effects in particular leases.
Q. Now, let's talk briefly about the wrong level of commerce. We've talked about that a lot.
I'd like to turn you to Tab 3-3. I'll put it up for you real quick here.
A. Okay.

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Q. This has been a source of discussion throughout the case.

Can you just tell the Court, very briefly, what we're seeing here?

A. What I've tried to do is provide an illustration of the kinds of sources of value added that goes on in the marketing function, whether it's vertically integrated into one of the majors or not.

What I've shown here, and I won't read through the whole thing, is the kinds of functions – I think it was the independent marketers buying outright, turning around and taking the crude away from the lease, perhaps in a buy-sell or perhaps transporting itself, and it ranges from – ranging for gathering and transporting, ranging for storing, either at receipt or delivery points, it involves the development of marketing and market information and expertise regarding types of crude oil as to what customers like what kinds of crude oil, how to handle transactions costs.

An important component is the assuming and managing of risk. To give you an illustration, that Falco Company that we looked at earlier, one of the independent marketers, highly sophisticated business, but bearing lots of risks, goes to Banque Paribas, a

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French bank, and will arrange 25-million-dollar financing facility to enable them to play the market, if you will, as a marketer, because they take the risk as they take title to their crude at the lease.

The importance that I drew from this, from an economic point of view, is it's a highly risky business, and that's why these people turn to these kinds of financing instruments, and the valuation of these is not used by some to sort of build up of costs, but by the marketplace. It is what the competitive marketplace tells you the value in the market of these is, the value added.

Q. So, realistically, you wouldn't be able to put a value on each one of those items and then come up with some sort of number for what the marketplace would value a particular marketer's contribution. Is that one way to say it?

A. It would be bad economics to do it line-by-line. You can look at the spread between the net-backs, if you will, that one dollar.

Q. Okay.

A. And I'm saying the dollar is not what the market reveals, but you can look at the difference between lease value and that net-back and that is giving you a measure of this factor.

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Q. When you showed the Court at the beginning of your testimony today this one dollar – the one dollar spread that remains even after we do a net-back, is it these types of factors that you're referring to here as accounting for that?

A. Yes. If you think about it as the independent marketers – Falco – buying at the lease at $19, and maybe doing the kind of transaction that we've all talked about, trading it in Cushing, Oklahoma, for a crude worth $22, in addition paying the party on the other side a two-dollar differential, leaving Falco with $20, Falco has to live off of that spread of one dollar in that hypothetical.

The reason I say that the market tells us what the spread is, what the compensation is, is we know from basic economics in a competitive market, as we all acknowledge here, we have all these independent marketers competing as well with the integrated companies, and they can't survive unless they produce a value added service between the lease, $19, and the trade center net-back of $20.

Q. Now, how do the plaintiffs account for that one dollar?

A. Well, that is the – as I understand it, in their framework with respect to buy-sells and internal

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transfers, that is the proposed mechanism for valuing what they call the proceeds from the production of the crude oil.

Q. Why don't we turn, then, to what some of the plaintiffs' experts have actually – how they've tried to account for this dollar that we've been talking about colloquially.

First, you've got a quote from Dr. McDonald, he's the plaintiffs' economic expert whose deposition was taken, and I have a sense we're not going to be hearing from him, but why don't you tell me what he had to say about that?

A. Well, Mr. McDonald is quizzed, Tab 3-4, "Is it possible that the Kochs or Scurlocks are performing a service as a marketer and as a merchant that the market values?"

"A. That would be one explanation."

"Q. Do you have any others?"

"A. No."

Q. How about Mr. Johnson, what did he have to say about the marketing function that accounts for that dollar?

I think we've probably gone over this before, so we can just direct the Court – this is Tab 3-4?

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A. Sure. This has been read into the record. I think, basically, his conclusion that the spread – the one-dollar spread in my picture there as compensation for this function, is, in fact, the result of incontrovertible economic reasoning about what these kinds of functions are and what the existence and survival of the independent sector of the market tells us.

Q. Okay.

A. They are at a different level of commerce than the lease.

Q. Now, I guess we're down to arbitrary selection of trade center values.

Now, you've told us a lot about the variations at the lease-level side. What can you tell us about the variations on the downstream pricing that the plaintiffs are using for their net-back methodologies?

A. Well –

Q. And we're at Tab 3-5.

A. Sure. Tab 3-5 – what I've shown the Court here is just a graph of the differences between the NYMEX price – NYMEX futures price and the P plus price.

Q. Why did you pick those two prices?

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A. Well, these are the two primary trade center values that the plaintiffs and their experts have talked about using to value crude oil received, say, on a net-back – received back on the back end of a buy-sell, for example.

What I graphed visually, so you can get it square, is the NYMEX – make sure I get it right, the minus P plus – the P plus is the zero line, and what I've graphed, then, is NYMEX minus, so when you see the line up above zero, the NYMEX is above the P plus.

Q. So what does this tell you?

A. And then the vertical access is showing you the range.

Q. What does this tell you? In other words, you're taking the NYMEX futures price and comparing it to the P plus price.

A. Sure.

Q. And what do we see? You tell me.

A. The reason I prepared this is it really goes to my points three and four on Tab 3-1, this point about the noncomparable supply and demand factors and the arbitrary selection of trade center values.

First, within a theory of what an economist would think of arbitrage economics, where the supply

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and demand factors are common across markets, except for transportation cost differences, one would expect these two prices to, in fact, not differ.

The fact that they do differ tells you – and they are quite – in common sense – quite efficient markets, they move very rapidly and are relatively well-organized – indeed, the NYMEX is well organized – and that variance is telling you even those two markets at the trade center is revealing different supply and demand factors at work.

Those supply and demand factors at work in the trade center involve the demands of parties who are not at the lease, including the parties who are there purely to trade risk, and that's part of what I meant by noncomparable supply and demand.

Secondly, in the fourth bullet up there, this leads within that framework of the plaintiffs to an arbitrary selection as to trade center value, for example, for valuing internally transferred crude, if that's the proposed methodology, because presumably the parties trading P plus and NYMEX, and both doing business as well as they can, and the importance of it is that there is so much variation, that depending on whether you picked the NYMEX or the P plus, you know, you use that as a damage calculation, and then that

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methodology, because it's at the wrong level of commerce with incomparable supply and demand factors relative to the lease on a – it swings enough, depending on what you pick, you could find gross underpayment or gross overpayment.

Q. Now, the plaintiffs actually prepared some charts they may show you on cross which indicate over the long haul that these differences between these trade centers, like the NYMEX and the futures and the P plus – if you take a five-year span, the differences are not that significant.

Would you agree with that over that long haul?

A. I would not at all be surprised, over the long haul, that these two might be quite close together.

Q. Let me just hand you – from the plaintiffs' report, I'll hand you Exhibit GG. Now, this is an exhibit from Mr. Johnson's – we know of his reports showing – comparing P plus to the NYMEX average monthly prices, and then you'll see the yearly figures there.

A. Yes.

Q. Okay. Now, even for a whole year, what does this tell you, if you take these prices and compare

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them over the full year?
A. Well, if you look at the differences that are sustained over a year and get yearly averages, you find sustained values of fairly large amounts and sustained runs over multiple years for these -- where these two prices -- the NYMEX and the P plus are not running together.
I did the calculations and didn't write them down.
Q. I did.
A. Okay.
Q. I wrote them down.
A. It's faster if you did.
Q. I wrote them down.
A. And I verified them.
Q. Here we go. Can you see it?
A. Yes.
So what you see here is that in 1990, the NYMEX is above the -- I'm sorry, is below the P plus by about 72 cents a barrel, and then the NYMEX stays above for three consecutive years the P plus, 68 cents, 10 cents, 81 cents, over '91, '92 and '93, and then they switch again and the P plus is higher than the NYMEX by 31 cents.
Q. Okay. Now, before we get to the

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significance of that to this case, let me ask you, we're now comparing basically, as I understand it, two prices for delivery at Cushing, Oklahoma.
A. Yes, that's correct.
Q. Are there also -- what do you observe if you compare market trading centers?
We've heard a lot about Midland and we've heard a lot about Cushing. What happens if you look between trade centers rather than at the same trade center?
A. Sure. If you look at Tab 3-6 -- I don't think I prepared a big board on this -- but you'll see a comparison of the Midland and Cushing WTI spot prices.
Q. Okay. What is that, then? What are those prices? Just describe what we're talking about.
A. Sure. What you're seeing here is the Midland minus Cushing difference on the Platt's reported WTI spot. It's a difference.
So the vertical axis is showing you the delta between them over the period January of 1988 to January of 1996.
Again, in this case, you see across trade centers that the selection of prices shows the same kind of volatility and sustained differences over

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sustained periods of time.
Also note that in this figure that were these two trade centers reflecting the same supply and demand conditions -- in other words, if you didn't have to look any farther than trade centers to pick up the localized supply and demand forces, one would have anticipated that these prices should only differ by the transportation cost difference between Midland and Cushing.
Q. Do they?
A. That's not a plausible consequence here. There is a positive transportation cost from Cushing -- from Midland to Cushing, and even though you might have seen some variations in the transportation cost, you've never seen them switching positive to negative, there would always be a positive difference between them.
Q. So then, I think you've made it clear, but what accounts for these differences?
A. The reasonable conclusion to be drawn is that even at trade centers one sees different localized supply and demand factors that are specific to that trade center and make it different from the trade center, and based on my evidence, also different from the supply and demand factors that one sees

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operative at the lease.
Q. Now, finally, I guess the question is, does it matter?
I mean, in terms of the quantities that we're disputing in this case, do these swings make any difference?
A. Yes. In Tab 3-7, I've done an illustration to illustrate that to the Court.
Q. Can you explain that, please?
A. Sure. What I've done in Tab 3-7 is I just took, based on the plaintiffs' screening methodology, a property at Tab 3-7 of one of the named plaintiffs, S. P. and Barbara Johnson, that occurs in Dagger Draw, and it's for the month of April of '94.
I just picked this month to show that the choice between P plus and NYMEX matters quantitatively.
Under the screening methodologies and reports that Mr. Johnson produced, this particular month showed an underpayment, under the plaintiffs' methodology, of $1.04, and that was based upon a difference between the plaintiffs' net-back on the P plus of $15.77 and a price paid to S. P. and Barbara Johnson of $14.73.
If you go back and apply a NYMEX futures

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price, what you find is the NYMEX was below the P plus at that time by $1.67, and applying the methodology, one would find a negative underpayment of 63 cents, and that's what I showed by the "(63)" on the right.

Q. I guess what we call an overpayment?

A. And then a swing in the value from underpayment to negative – from an underpayment to overpayment, however you want to call it, a swing in the value of $1.67.

Q. And then what conclusion do you draw from that?

A. Well, it's just an illustration of what I've already said, that these two markets, P plus and NYMEX, demonstratively reflect different supply and demand forces. Those forces are not present in the lease, they are not the same ones that are present at the lease in their totality, and as a result, there is an arbitrariness in the selection of these values.

Q. Now, finally, I'd like to just ask you a couple of questions before we close out here.

First, you've talked about problems and issues with respect to the level of commerce to make sure you're at the right level of commerce, and you've talked about the demonstrable influence of local supply and demand factors.

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Is there a way to eliminate the wrong level of commerce problem and to make sure you account for those localized factors?

A. I think there is. I think one would have to go do the kind of analysis that I did and looking first at where arm's-length transactions were being struck – that is, what the market is revealing about the value.

One would then look within that set of transactions at the attributes, was it a two-bedroom house or a three-bedroom house, was it Beverly Hills, or wherever you live in Chicago, and then one would have to analyze that relative to the particular attributes of a particular royalty owner to see whether they had a two-bedroom house or three-bedroom house, a Beverly Hills property or a Chicago property.

Q. Okay. Now, let me ask you, you – I know you have read the complaint in this case.

A. Yes.

Q. And you're aware that the plaintiffs seek to certify a class of all royalty owners to whom the defendants have underpaid royalties or overriding royalty payments.

Given the methodology and the data and your

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findings here, could you tell the Court if there is any way to determine the value of a particular royalty owners' oil, or in the words of the complaint, whether someone has been underpaid without analyzing the specific lease-level attributes that you have described today?

A. No, I don't think so. I think, to answer that question, the evidence says that there is substantial variation in the value of particular properties and particular transactions crude oil; that in order to determine the answer to the question you've just asked, I think it would require analysis of each individual potential class member's position relative to what they were paid to determine how – whether they were really underpaid or not.

MR. ZOTT: I have no further questions.

THE COURT: Where are we at in terms of winding up today?

Mr. Eaves?

MR. EAVES: I couldn't hear you, Your Honor. I'm sorry.

THE COURT: I was just wondering where we are in terms of concluding today.

What's your sense of the situation?

MR. EAVES: I'm sure we would all like to do

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that, Your Honor.

I guess I need to visit – now I've heard Professor Kalt's testimony, I need to visit and see what we're going to do in response.

THE COURT: Well, okay. Let me – we'll just break until about 1:15, and I'd like, at that point, to get some sense –

MR. ZOTT: This will be our last witness, Your Honor.

THE COURT: I'm sorry?

MR. ZOTT: As you know, this is our last witness.

THE COURT: I understand – some sense of what's contemplated in terms of the conclusion of this proceeding.

Okay. We'll be in recess until 1:15.

(Recess held.)